FIG. 1

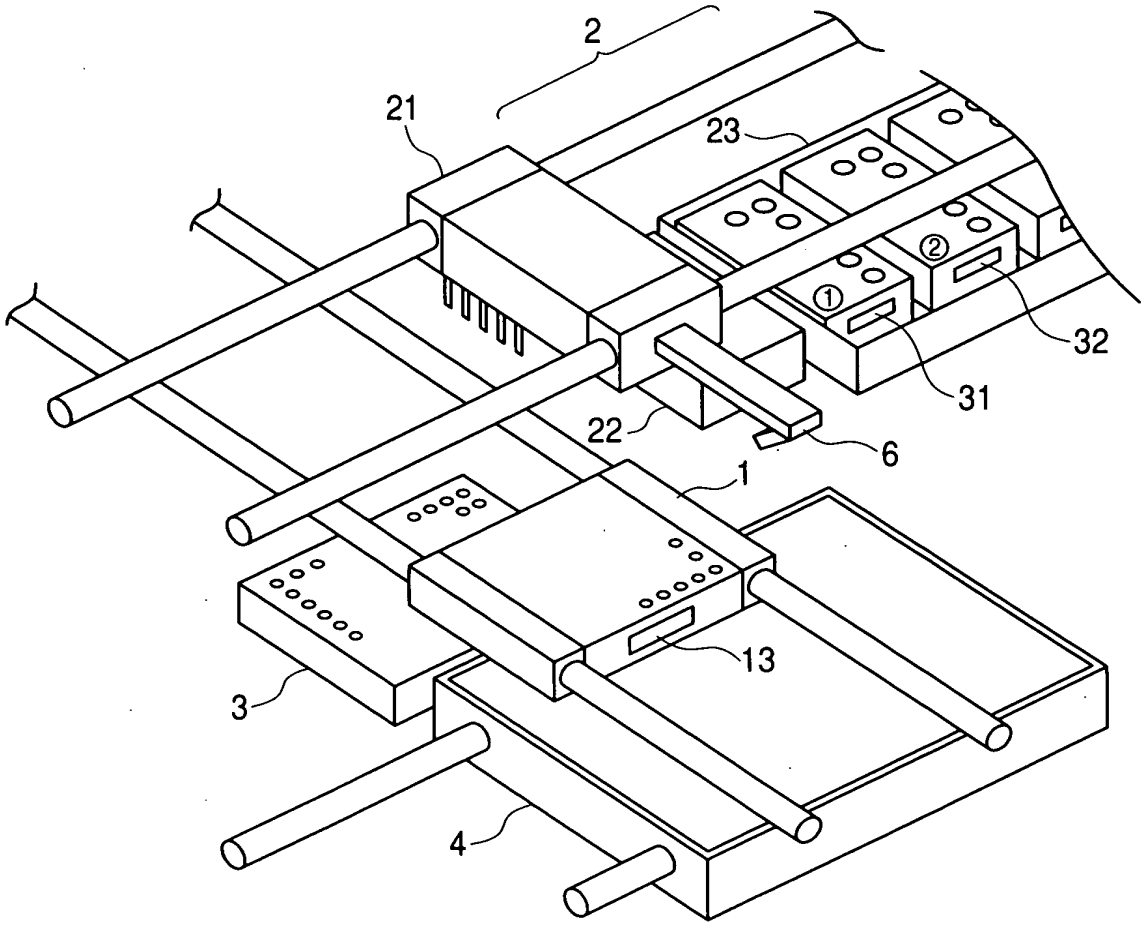


FIG. 2

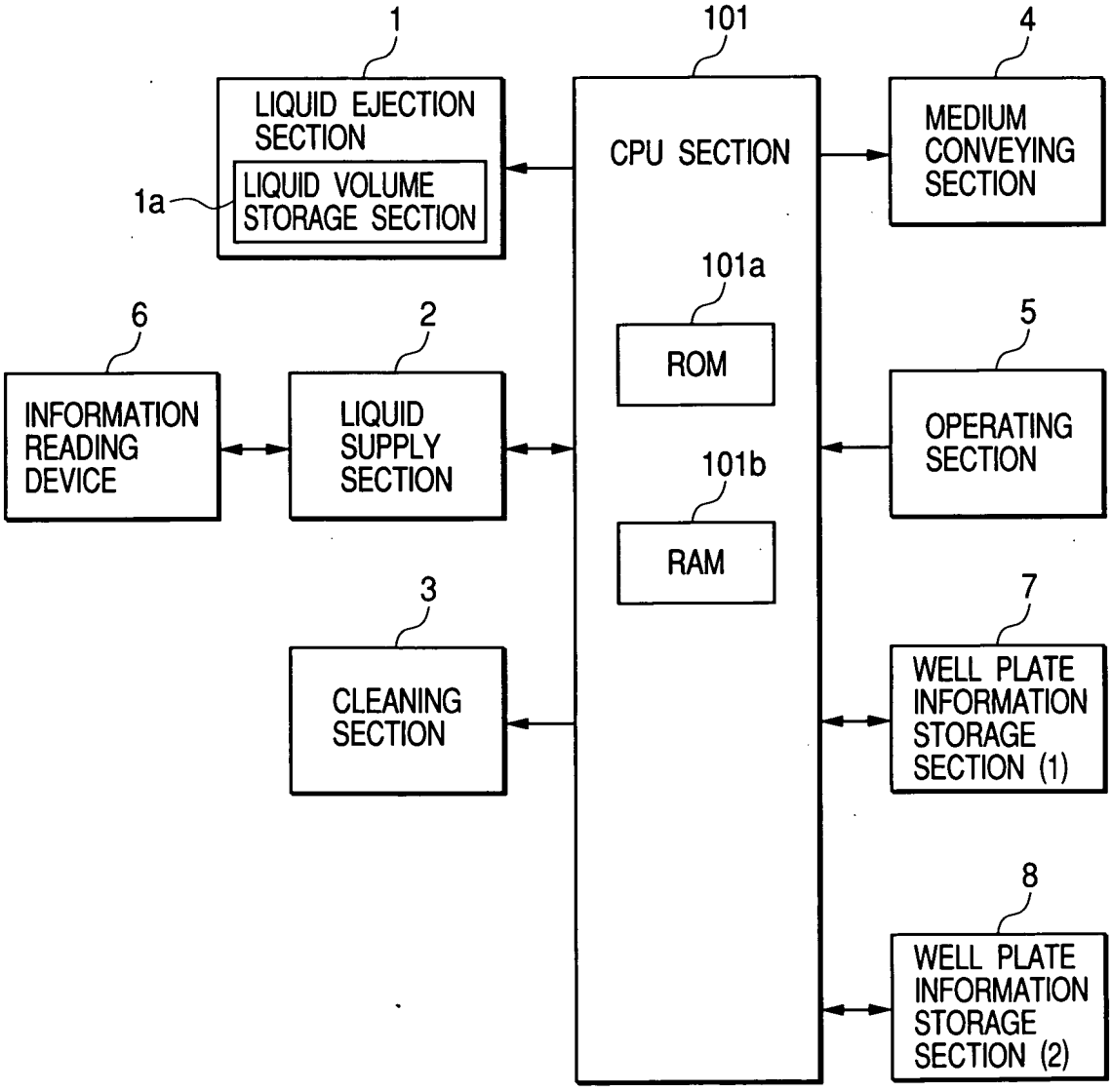

1
LIQUID EJECTION SECTION
1a
LIQUID VOLUME STORAGE SECTION
101
CPU SECTION
4
MEDIUM CONVEYING SECTION
101a
ROM
6
INFORMATION READING DEVICE
2
LIQUID SUPPLY SECTION
5
OPERATING SECTION
101b
RAM
3
CLEANING SECTION
7
WELL PLATE INFORMATION STORAGE SECTION (1)
8
WELL PLATE INFORMATION STORAGE SECTION (2)

FIG. 3

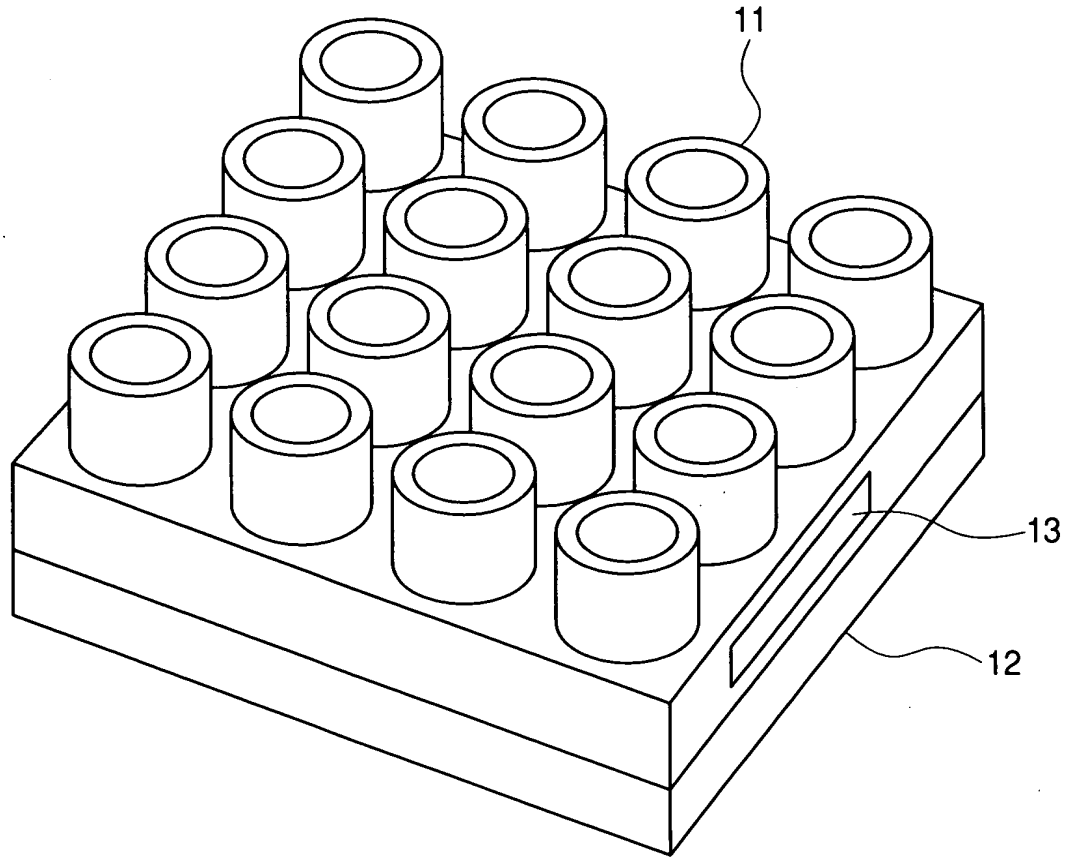


FIG. 4

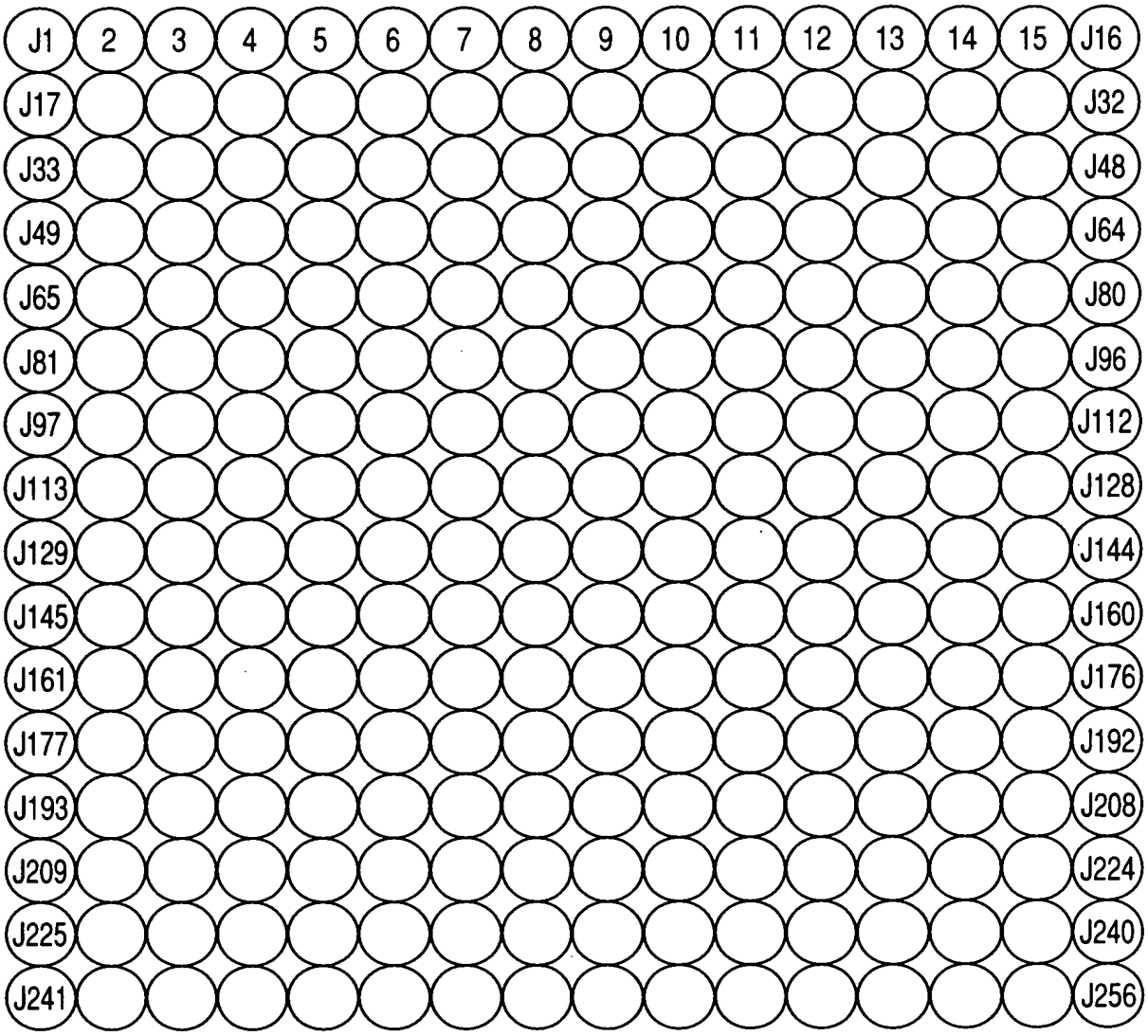

J1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
J16
J17
J32
J33
J48
J49
J64
J65
J80
J81
J96
J97
J112
J113
J128
J129
J144
J145
J160
J161
J176
J177
J192
J193
J208
J209
J224
J225
J240
J241
J256

FIG. 5

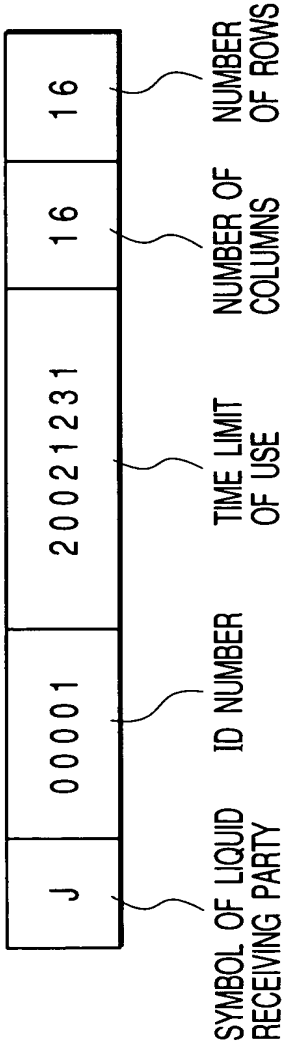

J
00001
20021231
16
16
SYMBOL OF LIQUID RECEIVING PARTY
ID NUMBER
TIME LIMIT OF USE
NUMBER OF COLUMNS
NUMBER OF ROWS

FIG. 6

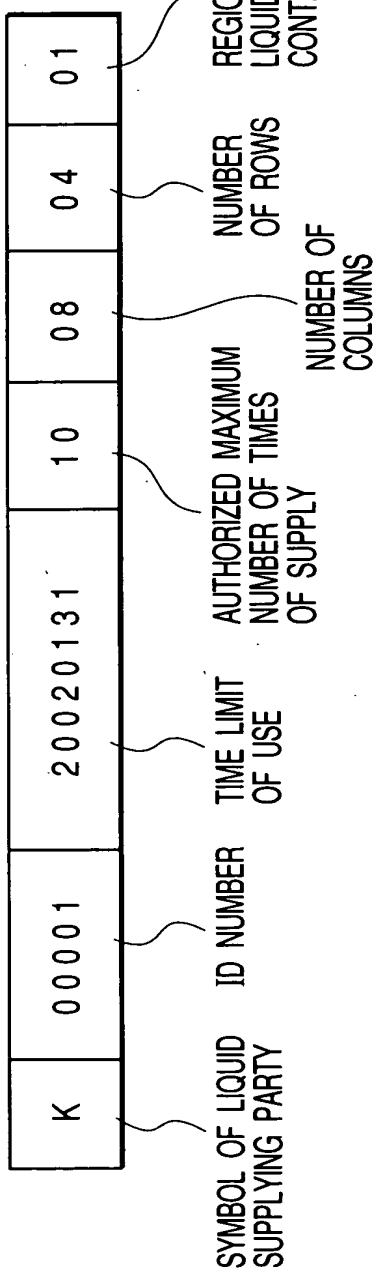

K
00001
20020131
10
08
04
01
SYMBOL OF LIQUID SUPPLYING PARTY
ID NUMBER
TIME LIMIT OF USE
AUTHORIZED MAXIMUM NUMBER OF TIMES OF SUPPLY
NUMBER OF COLUMNS
NUMBER OF ROWS
REGION NO. IN LIQUID RECEIVING CONTAINER

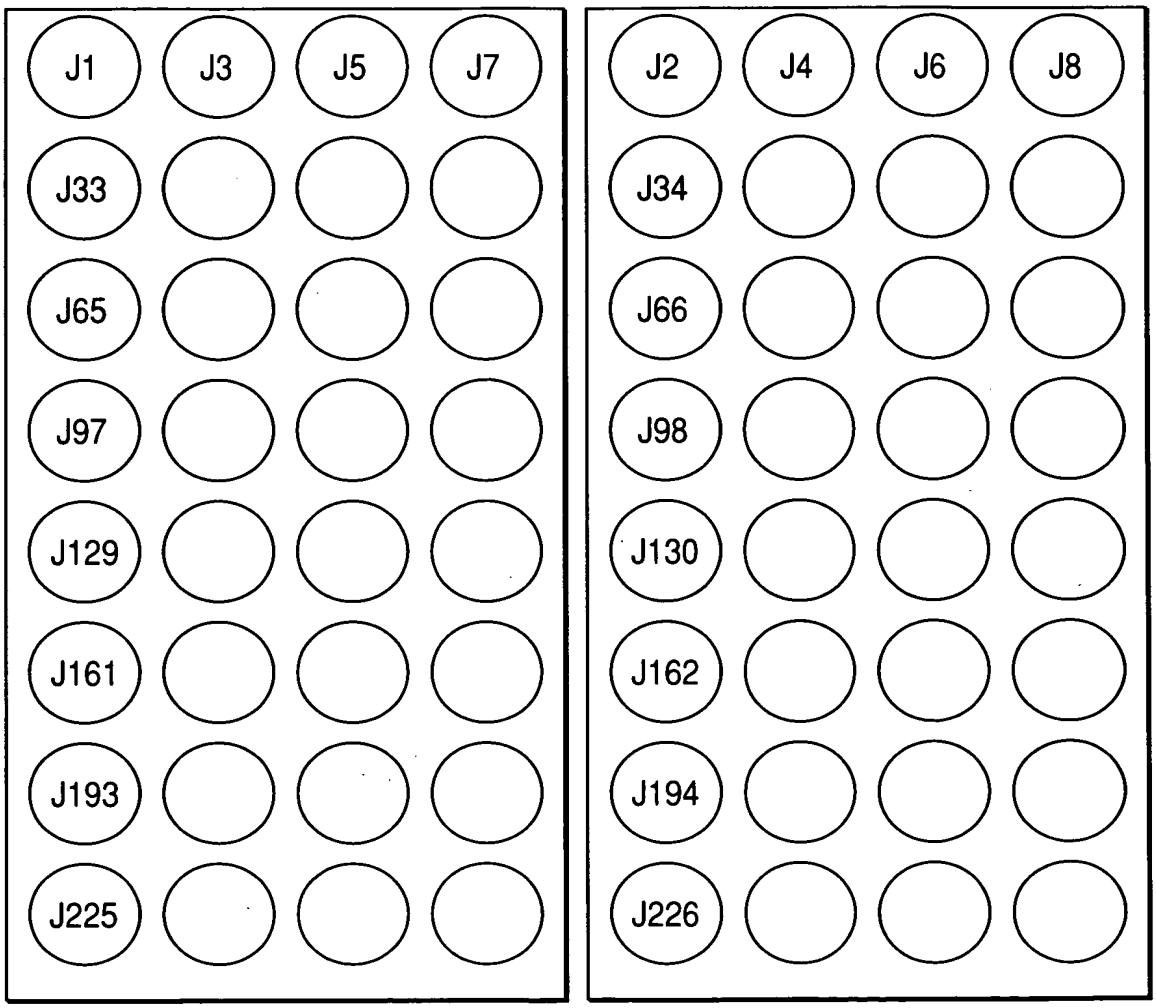
FIG. 7

WELL PLATE ID NO	NUMBER OF TIMES OF SUPPLY
00001	2
00002	2
00003	1
⋮	

FIG. 8

REGION NO. IN LIQUID RECEIVING CONTAINER	POSITION ID NO. OF WELL PLATE DEPOT STORING CORRESPONDING WELL PLATE
1	⑤
2	③
3	⑧
4	④
5	①
6	⑦
7	②
8	⑥

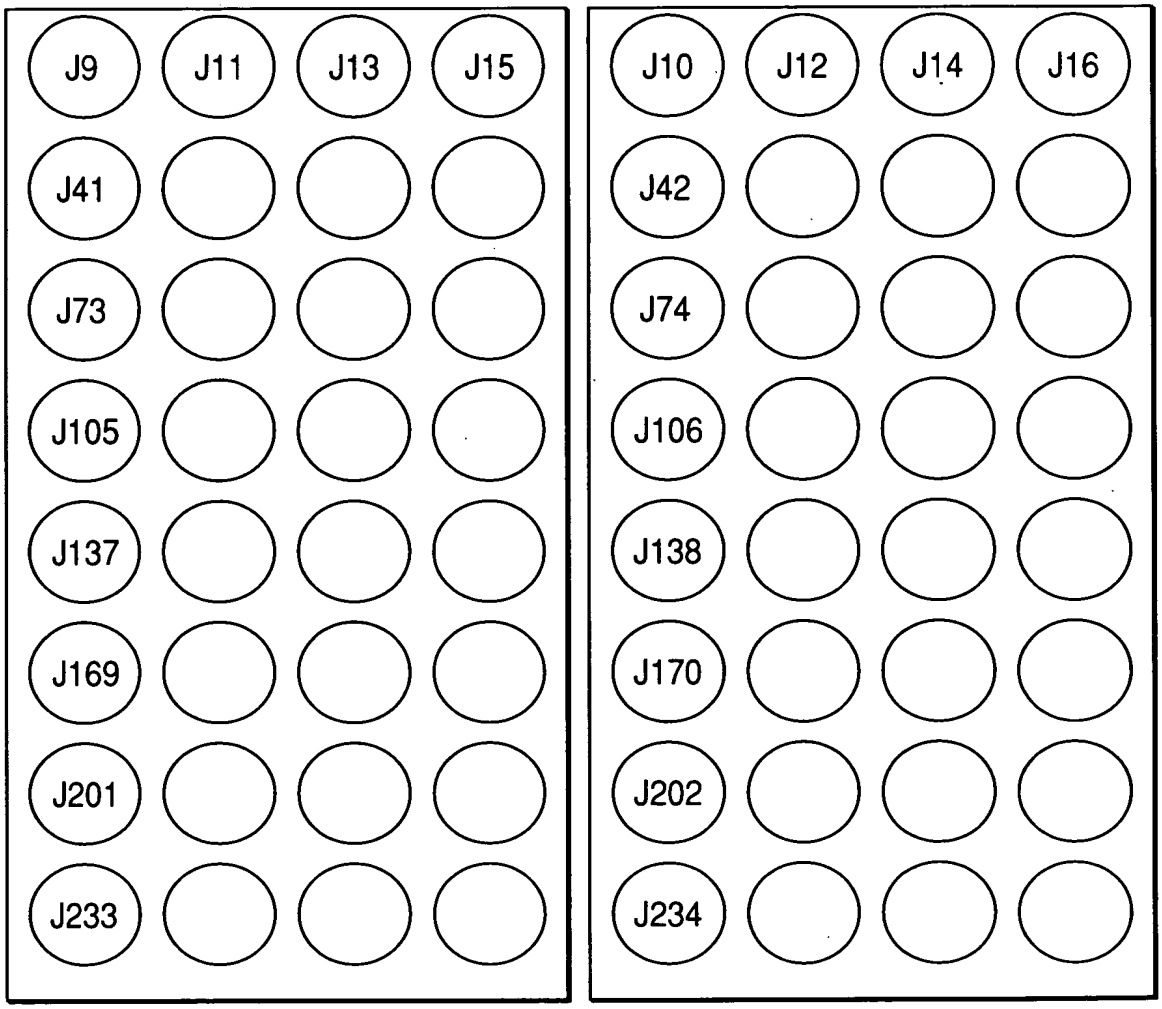
FIG. 9



RELATIONSHIP BETWEEN WELL PLATE FOR SUPPLYING LIQUID TO REGION 1 OF LIQUID RECEIVING CONTAINER AND LIQUID RECEIVING CONTAINER

RELATIONSHIP BETWEEN WELL PLATE FOR SUPPLYING LIQUID TO REGION 2 OF LIQUID RECEIVING CONTAINER AND LIQUID RECEIVING CONTAINER

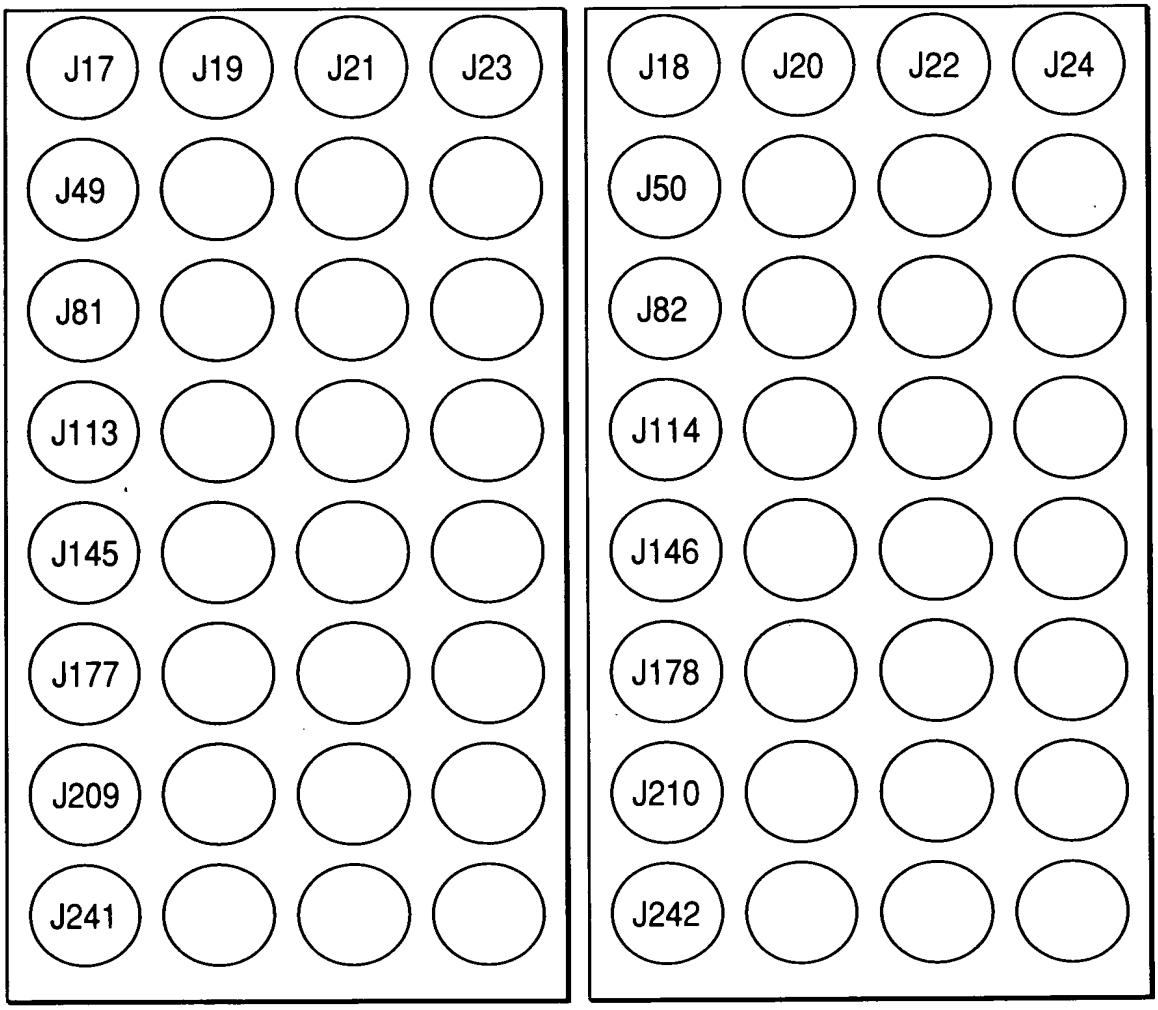
FIG. 10



RELATIONSHIP BETWEEN WELL PLATE FOR SUPPLYING LIQUID TO REGION 3 OF LIQUID RECEIVING CONTAINER AND LIQUID RECEIVING CONTAINER

RELATIONSHIP BETWEEN WELL PLATE FOR SUPPLYING LIQUID TO REGION 4 OF LIQUID RECEIVING CONTAINER AND LIQUID RECEIVING CONTAINER

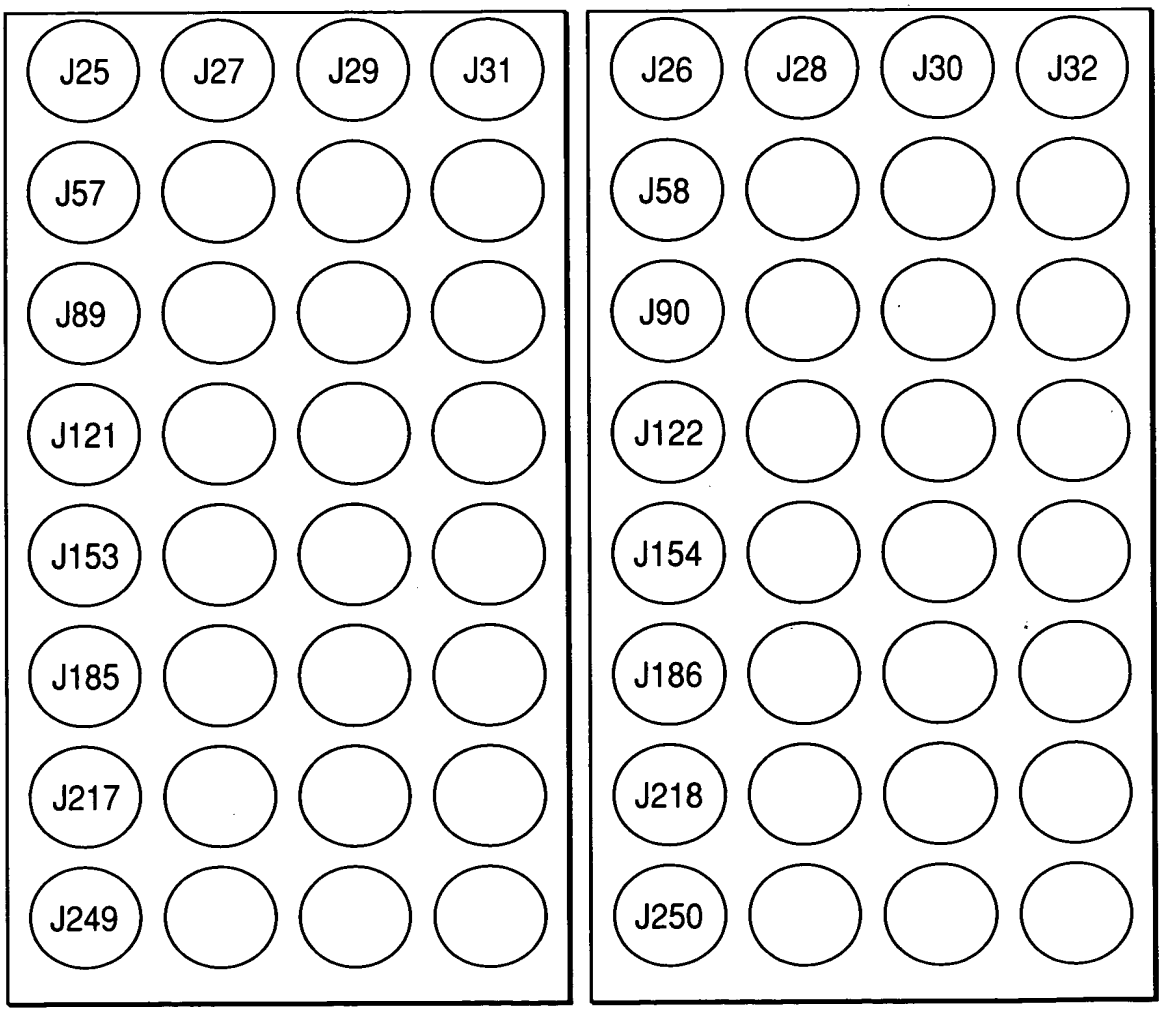
FIG. 11



RELATIONSHIP BETWEEN WELL PLATE FOR SUPPLYING LIQUID TO REGION 5 OF LIQUID RECEIVING CONTAINER AND LIQUID RECEIVING CONTAINER

RELATIONSHIP BETWEEN WELL PLATE FOR SUPPLYING LIQUID TO REGION 6 OF LIQUID RECEIVING CONTAINER AND LIQUID RECEIVING CONTAINER

FIG. 12



RELATIONSHIP BETWEEN WELL PLATE FOR SUPPLYING LIQUID TO REGION 7 OF LIQUID RECEIVING CONTAINER AND LIQUID RECEIVING CONTAINER

RELATIONSHIP BETWEEN WELL PLATE FOR SUPPLYING LIQUID TO REGION 8 OF LIQUID RECEIVING CONTAINER AND LIQUID RECEIVING CONTAINER

FIG. 13

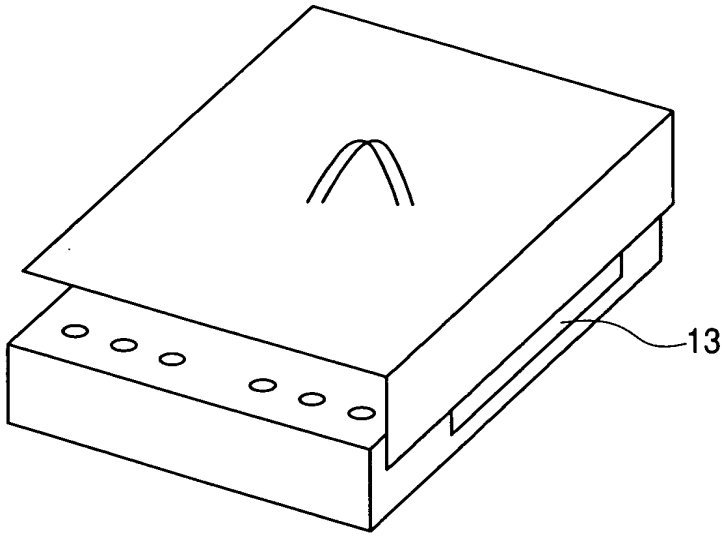


FIG. 14

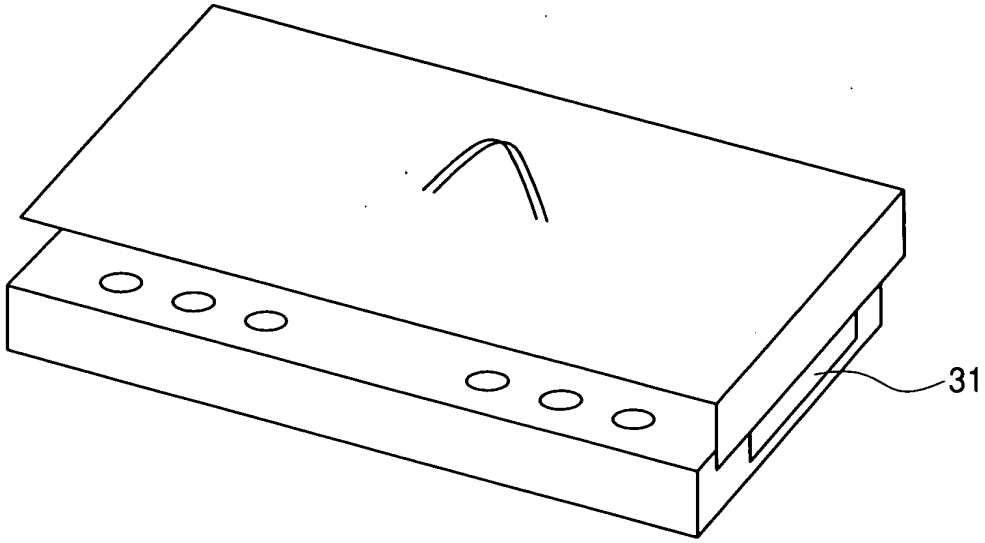


FIG. 15

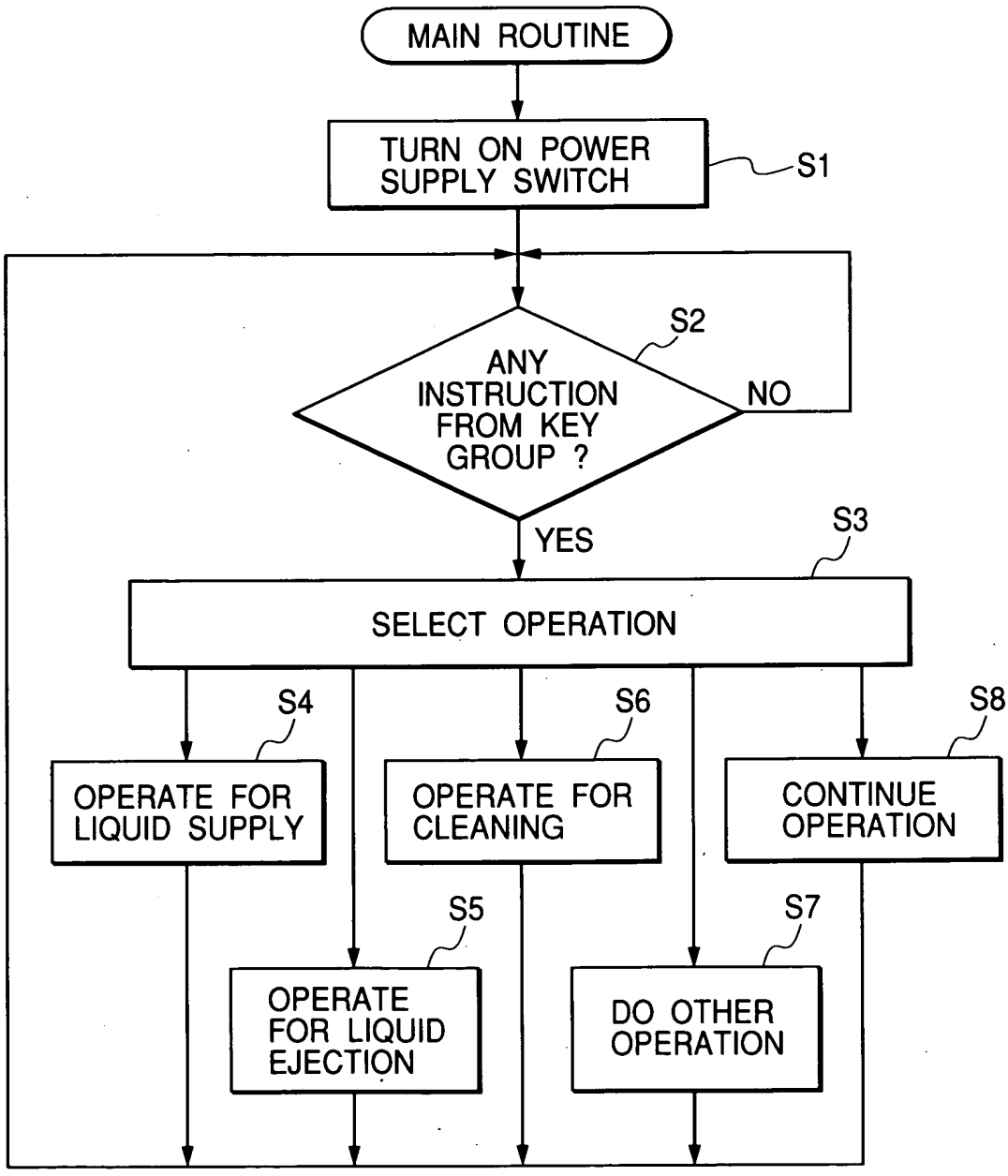

MAIN ROUTINE
TURN ON POWER SUPPLY SWITCH
S1
S2
ANY INSTRUCTION FROM KEY GROUP ?
NO
YES
S3
SELECT OPERATION
S4
OPERATE FOR LIQUID SUPPLY
S6
OPERATE FOR CLEANING
S8
CONTINUE OPERATION
S5
OPERATE FOR LIQUID EJECTION
S7
DO OTHER OPERATION

FIG. 16

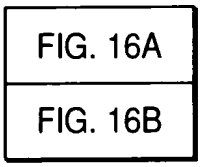


FIG. 16A

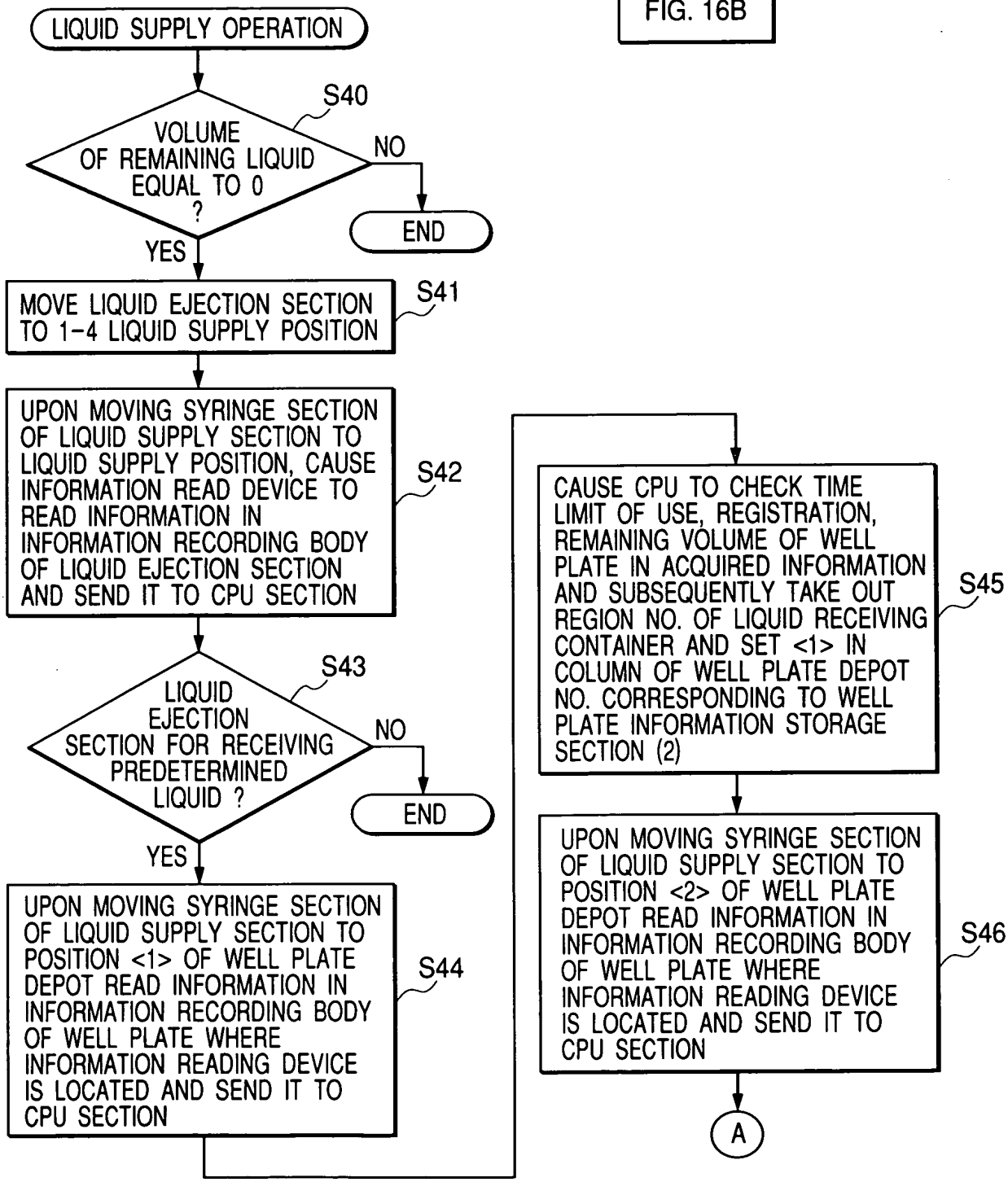


FIG. 16B

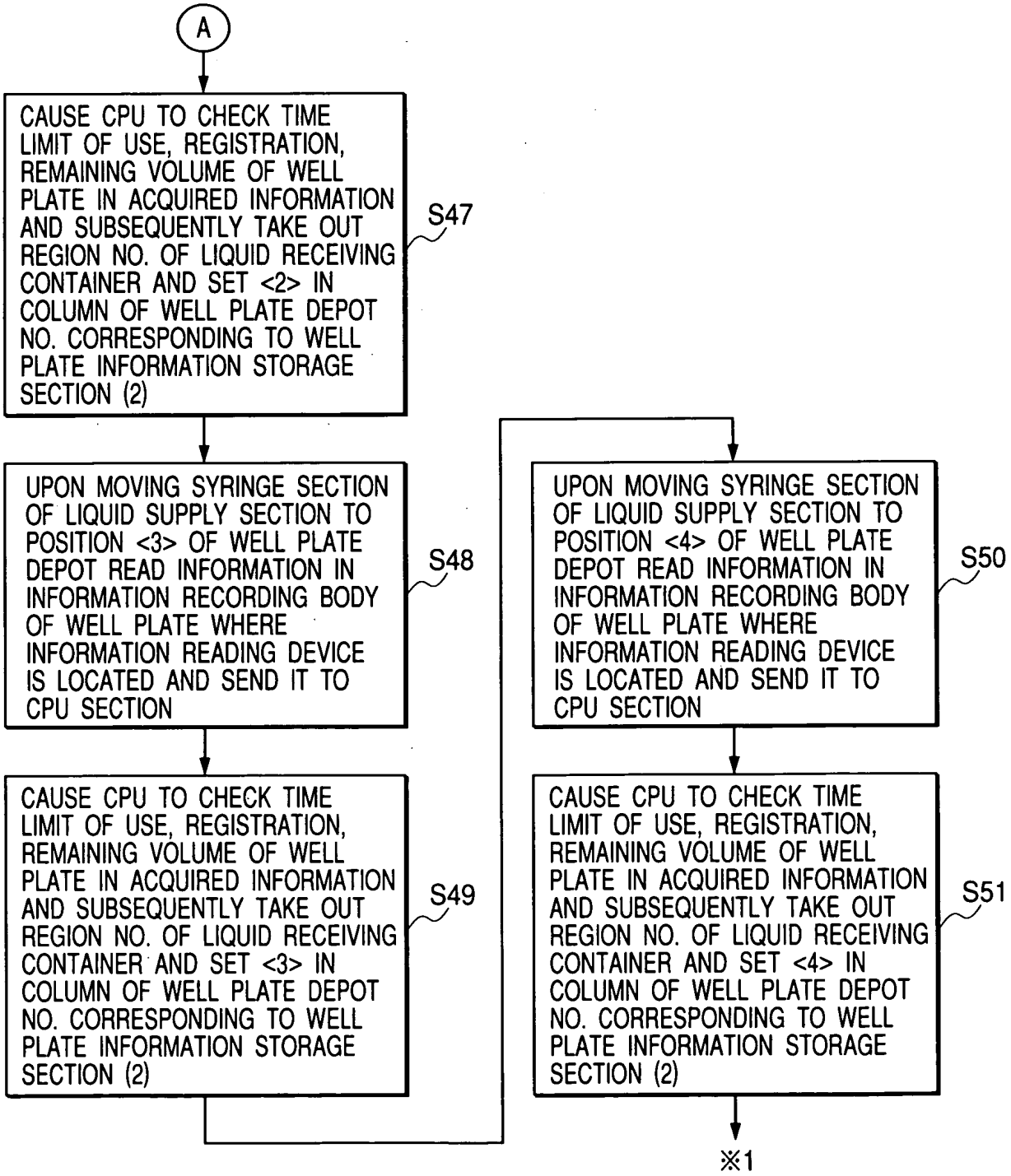

A
CAUSE CPU TO CHECK TIME LIMIT OF USE, REGISTRATION, REMAINING VOLUME OF WELL PLATE IN ACQUIRED INFORMATION AND SUBSEQUENTLY TAKE OUT REGION NO. OF LIQUID RECEIVING CONTAINER AND SET <2> IN COLUMN OF WELL PLATE DEPOT NO. CORRESPONDING TO WELL PLATE INFORMATION STORAGE SECTION (2)
S47
UPON MOVING SYRINGE SECTION OF LIQUID SUPPLY SECTION TO POSITION <3> OF WELL PLATE DEPOT READ INFORMATION IN INFORMATION RECORDING BODY OF WELL PLATE WHERE INFORMATION READING DEVICE IS LOCATED AND SEND IT TO CPU SECTION
S48
CAUSE CPU TO CHECK TIME LIMIT OF USE, REGISTRATION, REMAINING VOLUME OF WELL PLATE IN ACQUIRED INFORMATION AND SUBSEQUENTLY TAKE OUT REGION NO. OF LIQUID RECEIVING CONTAINER AND SET <3> IN COLUMN OF WELL PLATE DEPOT NO. CORRESPONDING TO WELL PLATE INFORMATION STORAGE SECTION (2)
S49
UPON MOVING SYRINGE SECTION OF LIQUID SUPPLY SECTION TO POSITION <4> OF WELL PLATE DEPOT READ INFORMATION IN INFORMATION RECORDING BODY OF WELL PLATE WHERE INFORMATION READING DEVICE IS LOCATED AND SEND IT TO CPU SECTION
S50
CAUSE CPU TO CHECK TIME LIMIT OF USE, REGISTRATION, REMAINING VOLUME OF WELL PLATE IN ACQUIRED INFORMATION AND SUBSEQUENTLY TAKE OUT REGION NO. OF LIQUID RECEIVING CONTAINER AND SET <4> IN COLUMN OF WELL PLATE DEPOT NO. CORRESPONDING TO WELL PLATE INFORMATION STORAGE SECTION (2)
S51
※1

FIG. 17

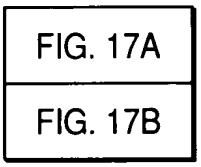


FIG. 17A

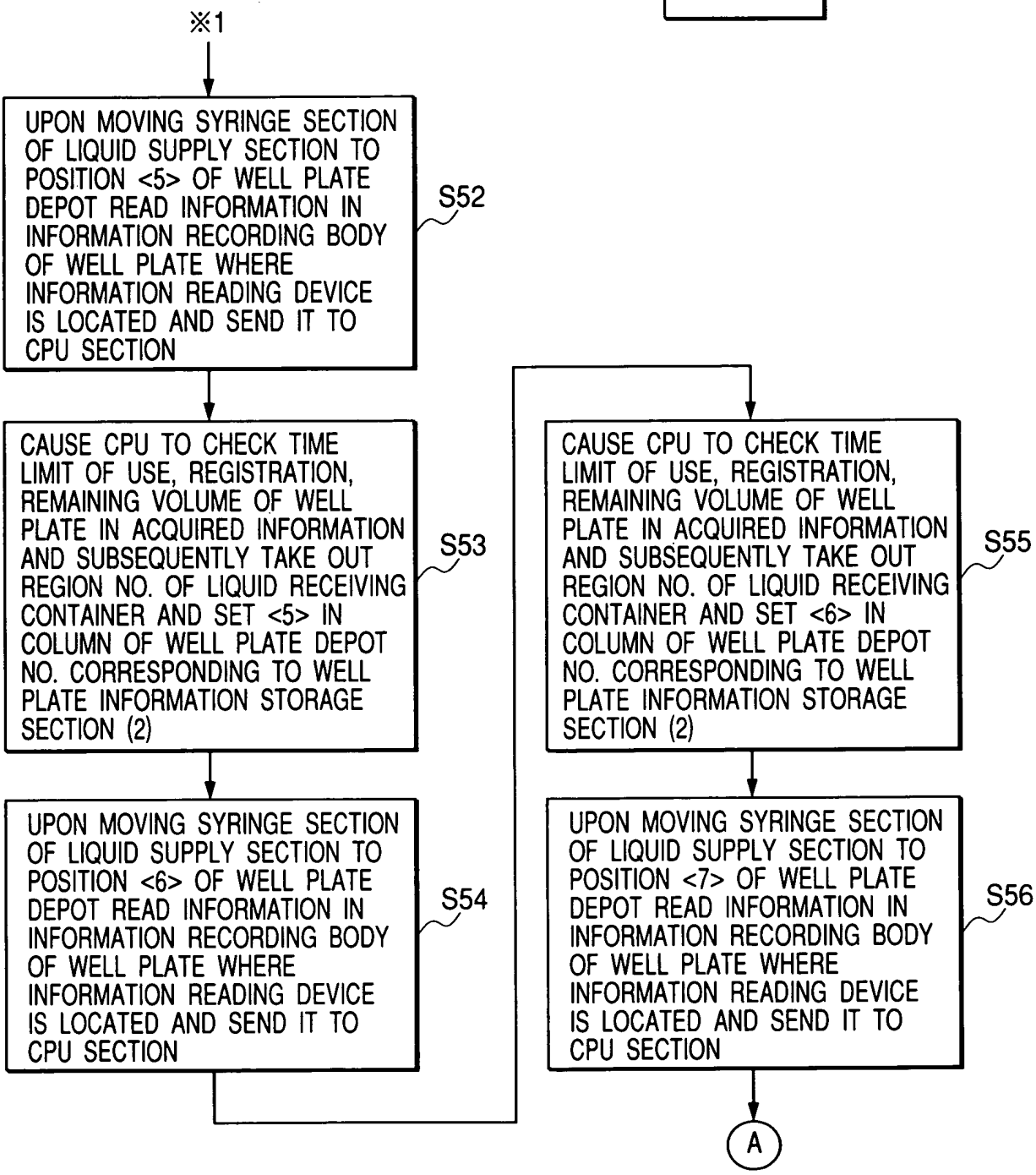


FIG. 17B

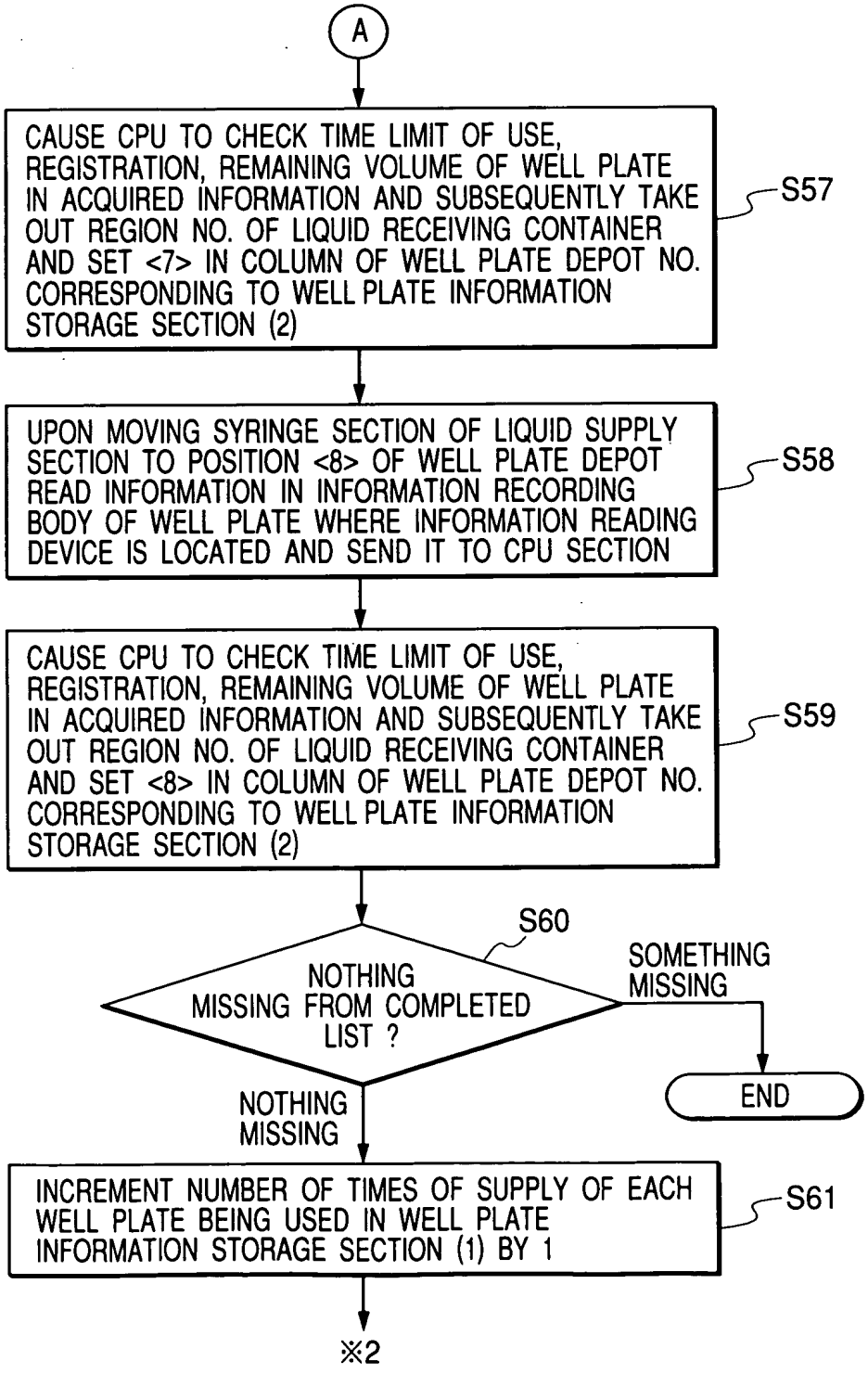

A
CAUSE CPU TO CHECK TIME LIMIT OF USE, REGISTRATION, REMAINING VOLUME OF WELL PLATE IN ACQUIRED INFORMATION AND SUBSEQUENTLY TAKE OUT REGION NO. OF LIQUID RECEIVING CONTAINER AND SET <7> IN COLUMN OF WELL PLATE DEPOT NO. CORRESPONDING TO WELL PLATE INFORMATION STORAGE SECTION (2)
S57
UPON MOVING SYRINGE SECTION OF LIQUID SUPPLY SECTION TO POSITION <8> OF WELL PLATE DEPOT READ INFORMATION IN INFORMATION RECORDING BODY OF WELL PLATE WHERE INFORMATION READING DEVICE IS LOCATED AND SEND IT TO CPU SECTION
S58
CAUSE CPU TO CHECK TIME LIMIT OF USE, REGISTRATION, REMAINING VOLUME OF WELL PLATE IN ACQUIRED INFORMATION AND SUBSEQUENTLY TAKE OUT REGION NO. OF LIQUID RECEIVING CONTAINER AND SET <8> IN COLUMN OF WELL PLATE DEPOT NO. CORRESPONDING TO WELL PLATE INFORMATION STORAGE SECTION (2)
S59
S60
NOTHING MISSING FROM COMPLETED LIST ?
SOMETHING MISSING
END
NOTHING MISSING
INCREMENT NUMBER OF TIMES OF SUPPLY OF EACH WELL PLATE BEING USED IN WELL PLATE INFORMATION STORAGE SECTION (1) BY 1
S61
※2

FIG. 18

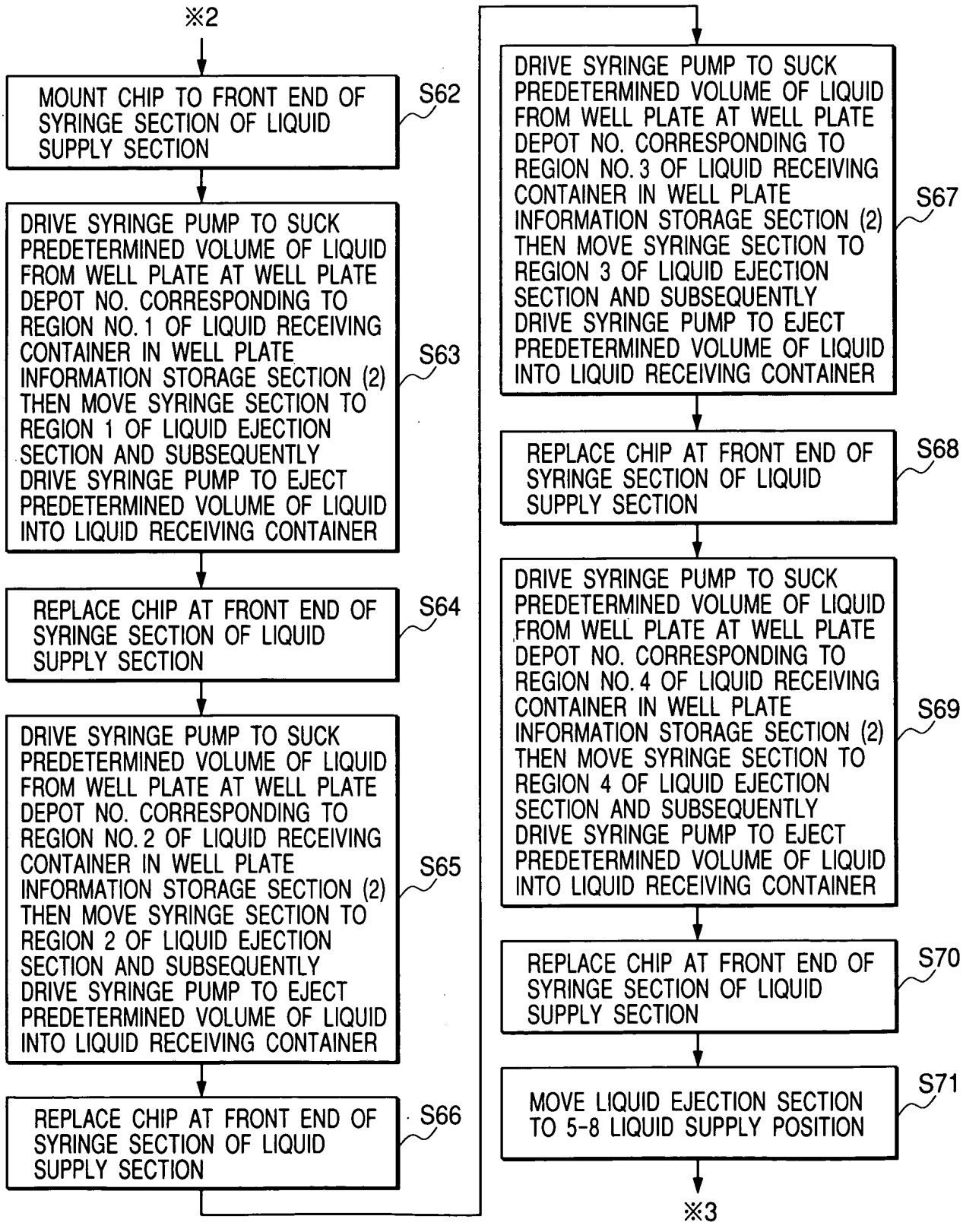

※2
MOUNT CHIP TO FRONT END OF SYRINGE SECTION OF LIQUID SUPPLY SECTION
S62
DRIVE SYRINGE PUMP TO SUCK PREDETERMINED VOLUME OF LIQUID FROM WELL PLATE AT WELL PLATE DEPOT NO. CORRESPONDING TO REGION NO. 1 OF LIQUID RECEIVING CONTAINER IN WELL PLATE INFORMATION STORAGE SECTION (2) THEN MOVE SYRINGE SECTION TO REGION 1 OF LIQUID EJECTION SECTION AND SUBSEQUENTLY DRIVE SYRINGE PUMP TO EJECT PREDETERMINED VOLUME OF LIQUID INTO LIQUID RECEIVING CONTAINER
S63
REPLACE CHIP AT FRONT END OF SYRINGE SECTION OF LIQUID SUPPLY SECTION
S64
DRIVE SYRINGE PUMP TO SUCK PREDETERMINED VOLUME OF LIQUID FROM WELL PLATE AT WELL PLATE DEPOT NO. CORRESPONDING TO REGION NO. 2 OF LIQUID RECEIVING CONTAINER IN WELL PLATE INFORMATION STORAGE SECTION (2) THEN MOVE SYRINGE SECTION TO REGION 2 OF LIQUID EJECTION SECTION AND SUBSEQUENTLY DRIVE SYRINGE PUMP TO EJECT PREDETERMINED VOLUME OF LIQUID INTO LIQUID RECEIVING CONTAINER
S65
REPLACE CHIP AT FRONT END OF SYRINGE SECTION OF LIQUID SUPPLY SECTION
S66
DRIVE SYRINGE PUMP TO SUCK PREDETERMINED VOLUME OF LIQUID FROM WELL PLATE AT WELL PLATE DEPOT NO. CORRESPONDING TO REGION NO. 3 OF LIQUID RECEIVING CONTAINER IN WELL PLATE INFORMATION STORAGE SECTION (2) THEN MOVE SYRINGE SECTION TO REGION 3 OF LIQUID EJECTION SECTION AND SUBSEQUENTLY DRIVE SYRINGE PUMP TO EJECT PREDETERMINED VOLUME OF LIQUID INTO LIQUID RECEIVING CONTAINER
S67
REPLACE CHIP AT FRONT END OF SYRINGE SECTION OF LIQUID SUPPLY SECTION
S68
DRIVE SYRINGE PUMP TO SUCK PREDETERMINED VOLUME OF LIQUID FROM WELL PLATE AT WELL PLATE DEPOT NO. CORRESPONDING TO REGION NO. 4 OF LIQUID RECEIVING CONTAINER IN WELL PLATE INFORMATION STORAGE SECTION (2) THEN MOVE SYRINGE SECTION TO REGION 4 OF LIQUID EJECTION SECTION AND SUBSEQUENTLY DRIVE SYRINGE PUMP TO EJECT PREDETERMINED VOLUME OF LIQUID INTO LIQUID RECEIVING CONTAINER
S69
REPLACE CHIP AT FRONT END OF SYRINGE SECTION OF LIQUID SUPPLY SECTION
S70
MOVE LIQUID EJECTION SECTION TO 5-8 LIQUID SUPPLY POSITION
S71
※3

FIG. 19

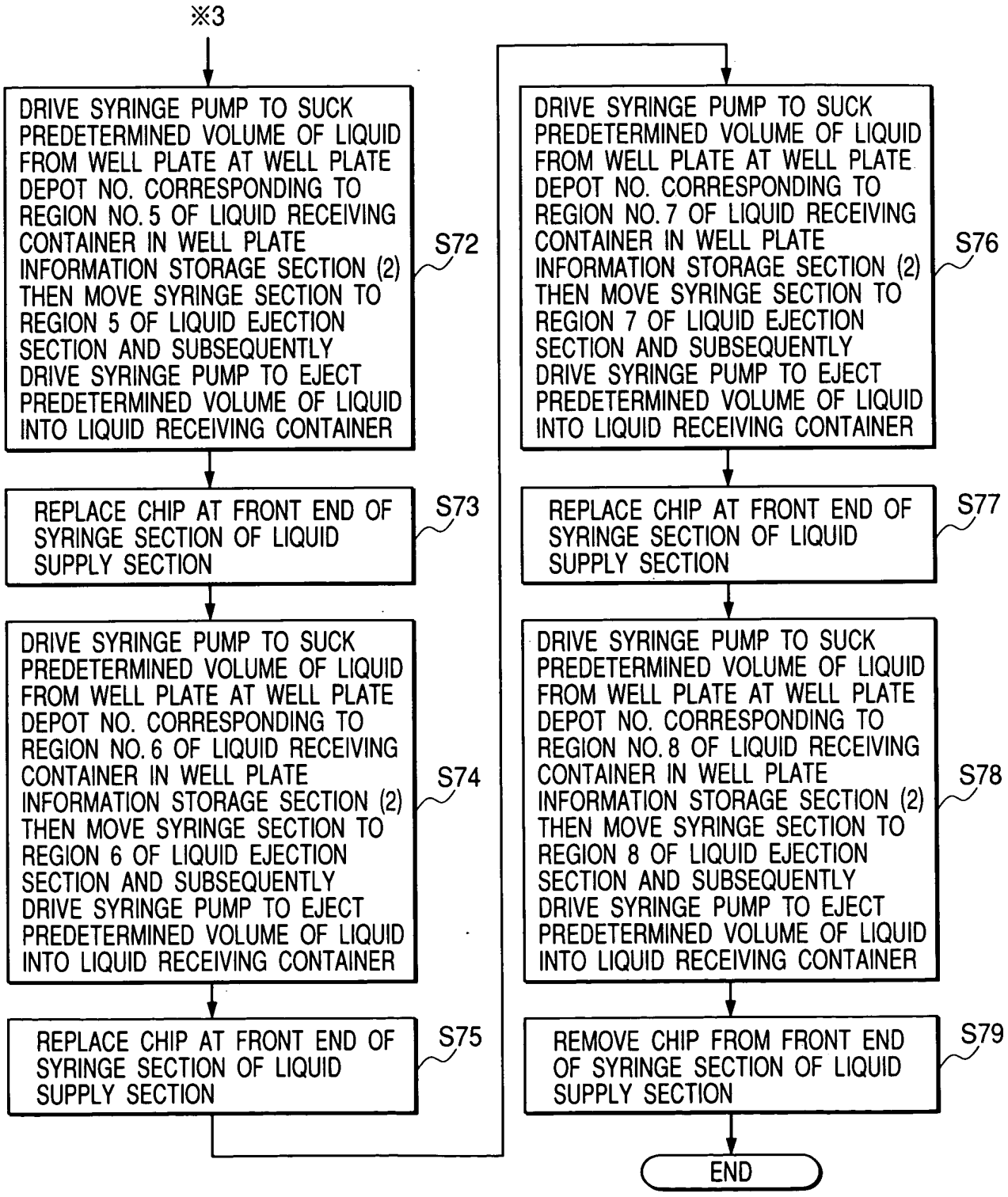

※3
DRIVE SYRINGE PUMP TO SUCK PREDETERMINED VOLUME OF LIQUID FROM WELL PLATE AT WELL PLATE DEPOT NO. CORRESPONDING TO REGION NO. 5 OF LIQUID RECEIVING CONTAINER IN WELL PLATE INFORMATION STORAGE SECTION (2) THEN MOVE SYRINGE SECTION TO REGION 5 OF LIQUID EJECTION SECTION AND SUBSEQUENTLY DRIVE SYRINGE PUMP TO EJECT PREDETERMINED VOLUME OF LIQUID INTO LIQUID RECEIVING CONTAINER
S72
REPLACE CHIP AT FRONT END OF SYRINGE SECTION OF LIQUID SUPPLY SECTION
S73
DRIVE SYRINGE PUMP TO SUCK PREDETERMINED VOLUME OF LIQUID FROM WELL PLATE AT WELL PLATE DEPOT NO. CORRESPONDING TO REGION NO. 6 OF LIQUID RECEIVING CONTAINER IN WELL PLATE INFORMATION STORAGE SECTION (2) THEN MOVE SYRINGE SECTION TO REGION 6 OF LIQUID EJECTION SECTION AND SUBSEQUENTLY DRIVE SYRINGE PUMP TO EJECT PREDETERMINED VOLUME OF LIQUID INTO LIQUID RECEIVING CONTAINER
S74
REPLACE CHIP AT FRONT END OF SYRINGE SECTION OF LIQUID SUPPLY SECTION
S75
DRIVE SYRINGE PUMP TO SUCK PREDETERMINED VOLUME OF LIQUID FROM WELL PLATE AT WELL PLATE DEPOT NO. CORRESPONDING TO REGION NO. 7 OF LIQUID RECEIVING CONTAINER IN WELL PLATE INFORMATION STORAGE SECTION (2) THEN MOVE SYRINGE SECTION TO REGION 7 OF LIQUID EJECTION SECTION AND SUBSEQUENTLY DRIVE SYRINGE PUMP TO EJECT PREDETERMINED VOLUME OF LIQUID INTO LIQUID RECEIVING CONTAINER
S76
REPLACE CHIP AT FRONT END OF SYRINGE SECTION OF LIQUID SUPPLY SECTION
S77
DRIVE SYRINGE PUMP TO SUCK PREDETERMINED VOLUME OF LIQUID FROM WELL PLATE AT WELL PLATE DEPOT NO. CORRESPONDING TO REGION NO. 8 OF LIQUID RECEIVING CONTAINER IN WELL PLATE INFORMATION STORAGE SECTION (2) THEN MOVE SYRINGE SECTION TO REGION 8 OF LIQUID EJECTION SECTION AND SUBSEQUENTLY DRIVE SYRINGE PUMP TO EJECT PREDETERMINED VOLUME OF LIQUID INTO LIQUID RECEIVING CONTAINER
S78
REMOVE CHIP FROM FRONT END OF SYRINGE SECTION OF LIQUID SUPPLY SECTION
S79
END

FIG. 20

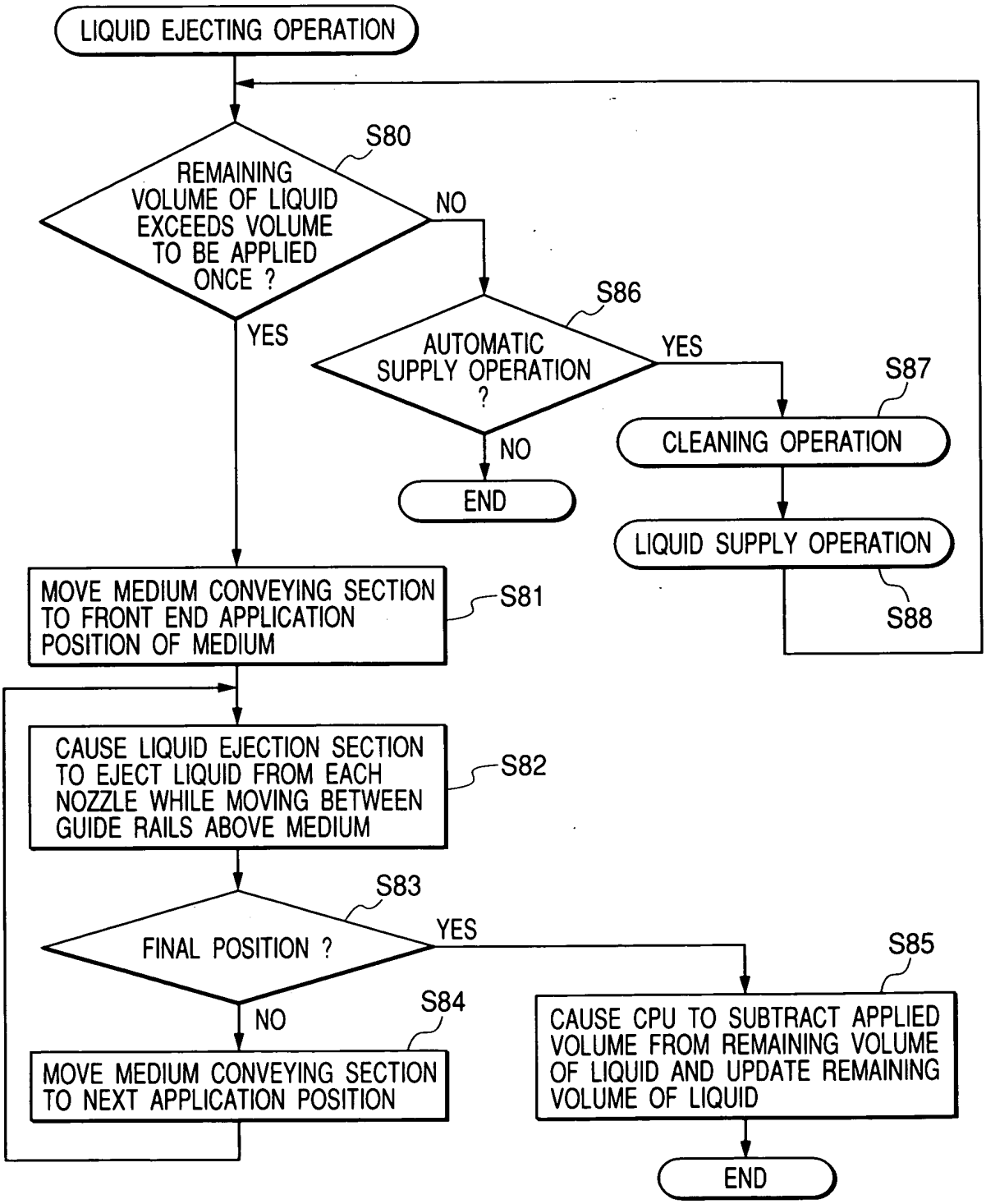

LIQUID EJECTING OPERATION
S80
REMAINING VOLUME OF LIQUID EXCEEDS VOLUME TO BE APPLIED ONCE ?
NO
YES
S86
AUTOMATIC SUPPLY OPERATION ?
YES
NO
END
S87
CLEANING OPERATION
LIQUID SUPPLY OPERATION
S88
MOVE MEDIUM CONVEYING SECTION TO FRONT END APPLICATION POSITION OF MEDIUM
S81
CAUSE LIQUID EJECTION SECTION TO EJECT LIQUID FROM EACH NOZZLE WHILE MOVING BETWEEN GUIDE RAILS ABOVE MEDIUM
S82
S83
FINAL POSITION ?
YES
NO
S84
MOVE MEDIUM CONVEYING SECTION TO NEXT APPLICATION POSITION
S85
CAUSE CPU TO SUBTRACT APPLIED VOLUME FROM REMAINING VOLUME OF LIQUID AND UPDATE REMAINING VOLUME OF LIQUID
END

FIG. 21

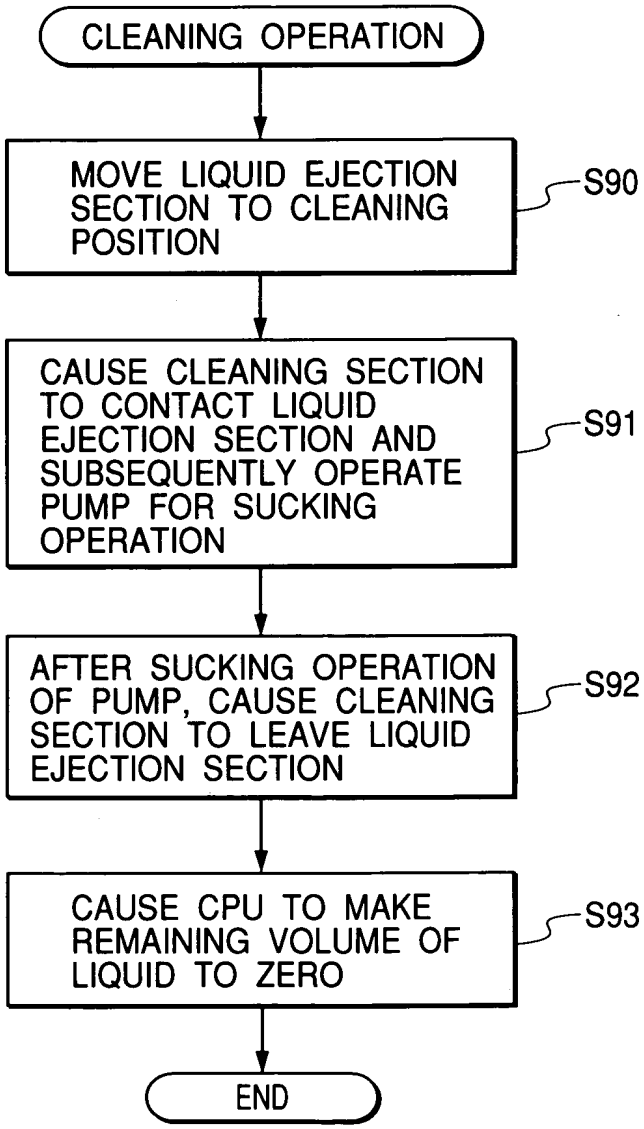
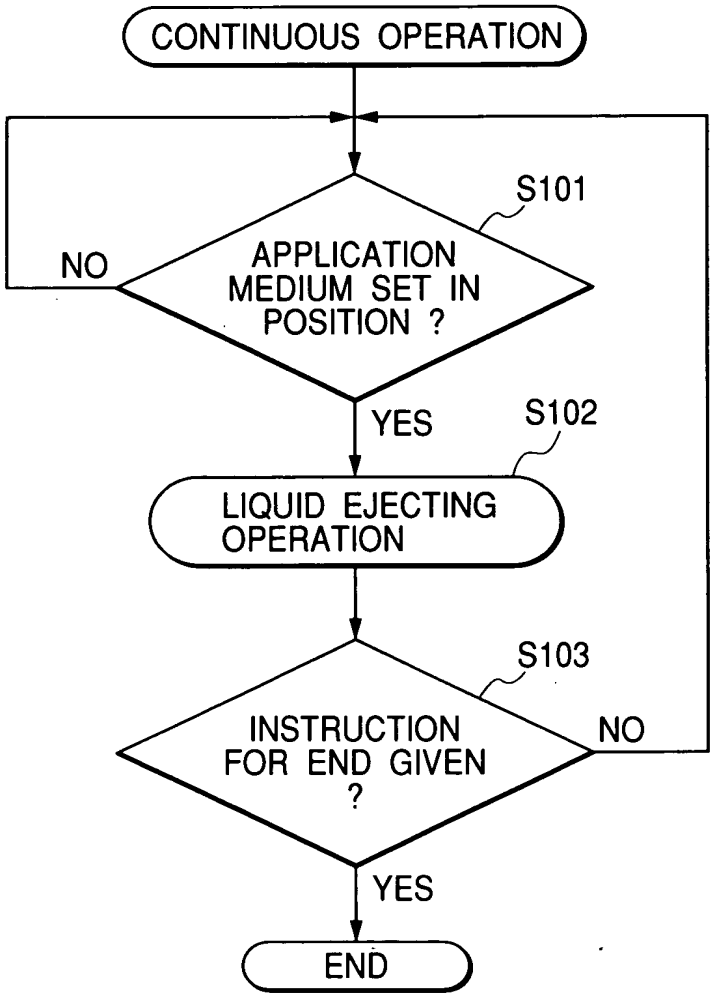

CLEANING OPERATION
MOVE LIQUID EJECTION SECTION TO CLEANING POSITION
S90
CAUSE CLEANING SECTION TO CONTACT LIQUID EJECTION SECTION AND SUBSEQUENTLY OPERATE PUMP FOR SUCKING OPERATION
S91
AFTER SUCKING OPERATION OF PUMP, CAUSE CLEANING SECTION TO LEAVE LIQUID EJECTION SECTION
S92
CAUSE CPU TO MAKE REMAINING VOLUME OF LIQUID TO ZERO
S93
END

FIG. 22


CONTINUOUS OPERATION
S101
APPLICATION MEDIUM SET IN POSITION ?
NO
YES
S102
LIQUID EJECTING OPERATION
S103
INSTRUCTION FOR END GIVEN ?
NO
YES
END